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Application No. 10/072,773

Filed: February 8, 2002

TC Art Unit: 2623

Confirmation No.: 2015

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~Process A method for the changing or alteration of the local sharpness of a photographic image having a multitude of image elements, including the steps of comprising:~~

recognizing at least one region of the photographic image, each such region containing an image of skin, sky or vegetation, wherein the recognition is based at least on a characteristic color in the respective region;

determining a correction mask, for change of the sharpness from image data representing the image to be sharpened, whereby elements of the correction mask describing for the changes of the sharpness and/or local sharpness describe a local change of the sharpness to be made to respective corresponding image elements of the photographic image, comprising:

using information related the photographic image, including at least local contrast in the photographic image, to determine at least some of the elements of the correction mask; and wherein:

the sharpness of at least some image elements in regions of the photographic image that contain images of skin or sky are to be decreased, according to information related to the respective regions; and

the sharpness of at least some image elements in regions of the photographic image that contain images of vegetation are to be increased, according to information related to the respective regions; and

applying the correction mask to the photographic image using, in addition to an image property, information related to the image for determination of the elements.

2. (Canceled)

3. (Currently Amended) ~~Process according to The method of claim 1, wherein using information related the photographic image comprises using information related to at least one of~~

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color tone, color saturation and color contrast of at least one image element in the vicinity of a target image element to determine an element of the correction mask that corresponds to the target image element~~the additional information is at least one local image property which is respectively present locally in the vicinity of the location and/or at the locations to which the elements of the correction mask for the change of the sharpness relate.~~

4-5. (Canceled)

6. (Currently Amended) Process according to The method of claim 51, wherein using the image information related the photographic image comprises using is at least one of:
 information obtained from an analysis of the photographic image data; and
 information associated with the photographic image data and available input into the a correction process ~~in addition to the image data.~~

7. (Currently Amended) Process according to The method of claim 1, further comprising: ~~the following steps~~
carrying out an analyzing~~sis of the photographic image for to determine~~ing if the photographic image contains~~sent information to recognize by analysis of the image to be corrected or an image derived therefrom~~ at least one characteristic image region ~~which has~~having a multitude of image elements; and
 assigning a nominal image sharpness or a nominal image sharpness range to at least one ~~recognized determined~~ characteristic image region; and
wherein determining the correction mask comprises determining at least some of the elements of the correction mask, such carrying out the change by way of the correction mask for the change or local change of the sharpness so that elements of the correction mask which that relate to the image elements which are included in the at least one ~~recognized determined~~ characteristic image region cause at least an approximation of the image sharpness to the assigned nominal image sharpness or the assigned nominal image sharpness range.

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8. (Currently Amended) ~~Process according to~~ The method of claim 7, including the further comprising step of

~~determining a degree of association on the basis of the analysis, which fixes the degree of association or the probability of association of an image element to a characteristic image region; and wherein~~

~~determining the correction mask comprises determining at least some of the elements of the correction mask based on~~ change of the image sharpness or local image sharpness in consideration of the nominal image sharpness or the nominal image sharpness range as well as in consideration of and the degree of association assigned to of the respective image elements.

9. (Currently Amended) ~~Process according to~~ The method of claim 6, wherein:

~~the image data for the image elements fix using information related the photographic image comprises using colour values and image properties which including at least include the brightness and the colour tone; and wherein further comprising:~~

~~the analysis of the image data for the determining of the image content information, includes the steps of comprising:~~

~~providing an assignment rule which determines which associating at least one colour value or colour values belong to with at least one preselected characteristic colour value, and whereby~~

~~each of the preselected colour values is assigned associating a nominal image sharpness or a nominal image sharpness range with at least one preselected characteristic color value; and wherein:~~

~~whereby the determining of the correction mask for the alteration of the image sharpness depending on the image information includes the steps of carrying out the determination of the elements of the correction mask of the change of the image sharpness depending comprises determining at least some of the elements of the correction mask based on;~~

~~the association of the colour values of image elements of the photographic image that correspond to the respective elements of the correction mask and to one of the at least one~~

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the preselected characteristic colour values associated with the color values of the respective image elements; ~~whereby the determination is carried out in consideration of and~~
the nominal image sharpness or the nominal image sharpness range ~~which is~~
associated with the predetermined characteristic colour value associated with the color values of the respective image elements.

10. (Currently Amended) ~~Process according to~~ The method of claim 6, including the further comprising:

~~steps of carrying out an analyzing~~ steps of the photographic image to be corrected or an image derived therefrom for recognizing a transitions between two image regions which that each includes a multitude of neighboring image elements, and which wherein one of the image regions have has a different structuring than the other image region; and wherein:

~~whereby the determining of the correction mask comprises determining at least some of the elements of the correction mask for the change of the image sharpness is carried out depending based on whether or not the~~ respective elements relate to the a transitions.

11. (Currently Amended) ~~Process according to~~ The method of claim 6, wherein:

~~the information assigned to the image using information related the photographic image comprises using data related to the position of artifacts in the photographic image;~~ and

~~whereby determining the correction mask comprises determining at least some of the elements of the correction mask for the change of the image sharpness are determined depending based on whether or not they the respective elements relate to locations in the photographic image where artifacts are present.~~

12. (Currently Amended) ~~Process according to~~ The method of claim 21, wherein determining the correction mask comprises based on the local contrast information determining a base mask for the change of the sharpness is determined based on local contrast information, the elements of which the base mask being are corrected based on the associated elements of an additional information mask

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for obtaining the correction mask for the change of the sharpness, whereby the additional information mask is determined from the additional information related the photographic image.

13. (Currently Amended) ~~Process according to~~ The method of claim 1, further comprising the further steps of:

applying an image detail reduction process to the photographic image data to be sharpened, ~~so such~~ that the coarse image data resulting therefrom represents a coarse image with less details than the photographic image to be sharpened, ~~whereby wherein~~ the coarse image includes a multitude of coarse image elements;

on the basis of ~~the~~ local contrast information, determining a coarse correction mask ~~which~~ that describes a correction of the image sharpness of the coarse image; and

based on ~~the additional information related the photographic image~~, correcting the elements of the coarse correction mask; ~~whereby and wherein~~

determining the correction mask for the change of the image sharpness corresponds to comprises using the corrected coarse correction mask or is determined on the basis thereof.

14. ~~A Device~~ for the focussing of a photographic image ~~with that includes~~ a multitude of image elements, comprising:

a recognition unit operative to recognize at least one region of the photographic image, each such region containing an image of skin, sky or vegetation, wherein the recognition is based at least on a characteristic color in the respective region;

a correction mask determining unit operative to ~~for determining~~ a correction masks, for the change of the image sharpness from the image data which represent the image to be sharpened, ~~whereby wherein~~

the elements of the correction mask for the describe changes of the image sharpness describe the local change of the to be made to respective corresponding image elements of the photographic sharpness image; and

for determining the elements of the correction mask are determined on the basis of an image property, including at least a local contrast, and additional information relating to the

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image, such that the sharpness of at least some image elements in regions of the photographic image that contain images of skin or sky are to be decreased, according to information related to the respective regions; and the sharpness of at least some image elements in regions of the photographic image that contain images of vegetation are to be increased, according to information related to the respective regions.

15. (Currently Amended) ~~Program for loading onto or running on a computer for~~ An article of manufacture, comprising:

a computer readable medium storing computer instructions operable to cause a computer that executes the instructions to carrying out perform the process according to method of claim 1.

16. (Canceled)

17. (Currently Amended) ~~Image reproduction device, comprising at least one device selected from the group of a~~ The device according to of claim 14, further comprising an image reproduction device

~~a control unit which carries out the process according to claim 1, and
a computer on which the program of claim 16 is loaded or runs.~~

18. (Currently Amended) ~~Image reproduction~~ The device according to of claim 17, which is wherein the image reproduction device is selected from the group consisting of a photographic printer, a printer, a photolab, a minilab, a monitor, and a computer with a monitor.

19-21. (Canceled)